1276 E. Evergreen Drive
Phoenixville, PA 19460
March 11, 1991

Ms. Lisa Cunningham (3HW26)
U.S. Environmental Protection Agency, Region 3
841 Chestnut Building
Philadelphia, PA 19107

Dear Ms. Cunningham,

Enclosed for your review is a copy of the comments and questions that I submitted to the Army Corps of Engineers concerning the recent investigation done by the IT Corporation at the site of the former Valley Forge General Hospital located in Chester County, PA.

There are five major flaws with this work which include: inadequate quality control of the sampling and analyses, an insufficient number of samples, poor sampling and analysis techniques, a scant site history, and an incomplete and inconclusive endangerment assessment.

The Army Corps of Engineers (Corps) held a public meeting on February 19, 1991 to discuss their findings. Although IT's three volume report states that "Risk to human health and the environment cannot be established.... Additional study is required" (p. 51), at the meeting, the Corps concluded from the endangerment assessment that there is no "imminent danger to humans or the environment."

After review of the IT report and my comments, I am sure that you will agree that further investigation, both on and off-site is necessary. Although there was a low level of quality control applied to the investigation, the results so far do indicate the presence of contaminants, including dioxin and metals (beryllium, lead, chromium and mercury). The suggested presence of nine compounds above the proposed corrective action levels is a real concern to the community since the presence of an incinerator suggests airborne spread of contamination.

This, along with the occurrence of several cases of Hodgkin's Disease from past residents of (b) (6), is very unsettling. Although the Chester County Health Department spokesman, Dr. Maher, said that, statistically, there is not a higher number of cases in Chester county than is expected, there has been no published report of their findings. Furthermore, the statistical approach he uses leaves many people dissatisfied. I believe there are six reported cases of Hodgkin's Disease from a small group of homes that border the property. Even if there is, in fact, no "imminent danger" now, there may have been a danger in the past or there may be a long-term danger now due to contamination from past activities at the site.

ORIGINAL (Red)

For all of these reasons, I urge you to carefully review the IT report and my findings. In addition, I am interested in the possibility of EPA testing of neighbor's soils. Many people, including myself, garden and consume food grown in this potentially contaminated soil. Will the EPA come and test our soils? Thank you, in advance for your cooperation in this matter. I look forward to hearing from you very soon.

Sincerely

(b) (6)

cc: Senator E. Baker, I. Ewald, Representative J. Heinz, T. Ryan, Representative R. Schulze, Senator A. Specter, Representative P. Vroon

ORIGINAL
(Red)

(b) (6)
Phoenixville, PA 19460
March 11, 1991

Mr. Gary Bonner
Pennsylvania Department of Environmental Resources
Lee Park
Suite 6010
555 North Lane
Conshohocken, PA 19428

Dear Mr. Bonner,

Enclosed for your review is a copy of the comments and questions that I submitted to the Army Corps of Engineers concerning the recent investigation done by the IT Corporation at the site of the former Valley Forge General Hospital located in Chester County, PA.

There are five major flaws with this work which include: inadequate quality control of the sampling and analyses, an insufficient number of samples, poor sampling and analysis techniques, a scant site history, and an incomplete and inconclusive endangerment assessment.

As you know, the Army Corps of Engineers (Corps) held a public meeting on February 19, 1991 to discuss their findings. Although IT's three volume report states that "Risk to human health and the environment cannot be established.... Additional study is required" (p. 51), at the meeting, the Corps concluded from the endangerment assessment that there is no "imminent danger to humans or the environment."

After review of the IT report and my comments, I am sure that you will agree that further investigation, both on and off-site is necessary. Although there was a low level of quality control applied to the investigation, the results so far do indicate the presence of contaminants, including dioxin and metals (beryllium, lead, chromium and mercury). The suggested presence of nine compounds above the proposed corrective action levels is a real concern to the neighboring community since the presence of an incinerator suggests airborne spread of contamination.

This, along with the occurrence of several cases of Hodgkin's Disease from past residents of [redacted] (b) (6) [redacted], is very unsettling to the community. Although the Chester County Health Department spokesman, Dr. Maher, said that, statistically, there is not a higher number of cases in Chester county than is expected, there has been no published report of their findings. Furthermore, the statistical approach he uses leaves many people dissatisfied. I believe there are six reported cases of Hodgkin's Disease from a small group of homes that border the property. Even if there is, in fact, no "imminent danger" now, there may have been a danger in the past or there may be a long-term danger now due to contamination from past activities at the site.

ORIGINAL
(Red)

For all of these reasons, I urge you to carefully review the IT report and my findings. In addition, I am interested in the possibility of DER testing of neighbor's soils. Many people, including myself, garden and consume food grown in this potentially contaminated soil. Will the DER come and test our soils? Thank you, in advance for your cooperation in this matter. I look forward to hearing from you very soon.

Sincerely,

(b) (6)

cc: Senator E. Baker, I. Ewald, Representative J. Heinz, T. Ryan
Representative R. Schulze, Senator A. Specter,
Representative P. Vroon

ORIGIN

(b) (6)
Phoenixville, PA 19460
March 11, 1991

Mr. Rick Wilson, Project Manager
U.S. Army Corps of Engineers, Omaha District
215th North 17th Street
Omaha, Nebraska 68102-4978

Dear Mr. Wilson,

Attached is an outline of detailed comments, questions and concerns that are the basis for my statement made at the Army Corps of Engineers' February 19, 1991 public meeting.

I understand from your remarks at the meeting that you will review these comments for incorporation into your recommendations, and that this entire letter will also be included in your final report recommending further study of this site. I thank you again for your cooperation in this matter. I look forward to receiving your feedback on my attached comments and questions.

Sincerely,

(b) (6)

cc: Senator E. Baker, G. Bonner (PA DER), L. Cunningham (U.S. EPA)
I. Ewald, Representative J. Heinz, T. Ryan,
Representative R. Schulze, Senator A. Specter
Representative P. Vroon

ORIGINAL (Red)

Comments on IT's Site Investigation
Valley Forge General Hospital
March 11, 1991
By: (b) (6)

These comments are the details that support my statement made to the Army Corps of Engineers at the February 19, 1991 public meeting (see attached).

As an opening comment, I criticized the size of the document. For the average person, this 3 volume report is overwhelming. An executive summary would have been helpful. There is redundant and extraneous information which resulted in a very large report. Some of the redundancies are to be expected, such as tabulation of the analyses. However, the report could have been more concise and better organized. There was a good deal of extraneous material such as information on churches/ schools in the area which is not used for any purpose, some pages of tables listing chemicals for which the samples were not analyzed, and some pages in Appendix E that do not belong there. They are apparently from other portions of the report or from the work plan or some other unrelated document. Also, there were unnecessary and lengthy technical explanations. For example, the 17 pages spent explaining the endangerment assessment procedures lead to a statement that more qualitative risk assessment is necessary.

I. QUALITY CONTROL:

The level of quality control that one applies to a project should be determined by the level of certainty that one expects from the results. If the results will be viewed as preliminary and used only to provide guidance for future study, a low level of quality control is acceptable. With this approach, no definitive conclusions (such as endangerment assessments) can be reached. Due to the nature and extent of the objectives of this project, a high degree of quality control should have been applied. Based on this premise, the level of quality control that is indicated in the report is totally inadequate. The low level of quality control that is indicated from this report results in data that should only be used to formulate the sampling and analytical strategy for the next step of the investigation.

* An explanation of the definition and purpose of each type of QC sample seems necessary. One has to assume that the appropriate types and number of laboratory QC samples were taken since the information on these is not included. These would include matrix spike/matrix spike duplicate samples (MS/MSD), reagent blanks and method blanks. It is also a good idea to have storage blanks if high quality control is desired. This report did mention method blanks several times in stating that contamination was found in them. How much contamination was there in these method blanks? Where the MS/MSD samples and storage blanks taken? How often were all these samples analyzed? (once every 20 samples?)

* This report seems to assume that when contamination is found in a blank, the only result in question is the one for that particular analyte. This is not true. All the data is in question because contamination of a method blank or unacceptable results from spiked samples indicates that the laboratory methods/procedures are lacking in quality. Therefore, none of the data can be validated.

* This report also implies a misunderstanding of the meaning of a split, a duplicate and a replicate sample. Each is unique and serves a different purpose.
A split sample is a sample that is split in half and analyzed at a separate lab. The material in each sample is identical. A split sample verifies interlaboratory repeatability.
A duplicate sample is a sample that is split in half and analyzed at the same lab. These samples are also identical. A duplicate verifies intralaboratory repeatability.
A replicate sample is one which is collected immediately after the sample it replicates, using the same sampling method. These samples, therefore, are not identical, but should be very similar. A replicate verifies sampling techniques.
The Corps stated at the 2/19/91 meeting that 10% of the samples were split samples sent to the MRD lab. Exactly how many splits were taken? What were the results? This report is obviously incomplete.

* The duplicates, replicates and split samples must be analyzed for the same compounds. This was consistently not done. How can one compare two samples if they aren't analyzed for all of the same chemicals?

o Page 19 mentions a "co-located duplicate split". What is this?

o The "duplicate" sample of MW5 is really a replicate since it was collected as two different samples 15 minutes apart. Furthermore, it is a poor replicate since it wasn't collected immediately after the sample. There is now the question of whether the aquifer characteristics changed during this time span. It is unknown if the differences in results are due to the time span or the field methodology.

* Apparently there were no field blanks taken. These are also used to verify proper field procedures.

ORIGINAL (Red)

I. QUALITY CONTROL (CONT.)

* Trip blanks are QC samples that should start out with the empty containers and make the entire trip to the field and to the lab with the samples. They are used to ascertain if contamination exists in the sampling bottles or the preservatives or during transportation or storage facilities or any combination of these possible sources when used in combination with other blanks. There should be one in every cooler as was specified in the work plan This was not done. Out of 17 days of shipments (9 days to ITCINC, 3 days to ITKNOX and 4 days to USACE) only 4 trip blanks were taken. Out of these four, the only results that appear in the tables are for the trip blank that accompanied the groundwater sampling, and this was not analyzed for every chemical. Where are the results from the remaining three blanks (from 10/15/90)? Furthermore, there were no trip blanks ever sent to the USACE lab.

  Trip blanks should be the same media as the samples (soil or water). This also was not done correctly. Water trip blanks are not correct during collection of soil samples. Also, where did the blanks come from? It is important to verify that the source is "clean".

o Where are the results from the "split" sample collected for MW4 that appears on the Chain of Custody form (COC) but not in table 7?

* The COC forms in the report are incomplete. This means that sample transfer procedures cannot be validated. They also do not list the temperature at shipment and receiving as was agreed to in your October 26, 1990 response to my work plan comments.

* Of the quality control samples that were collected and analyzed, the report repeatedly mentions contamination of the method blanks, and the "duplicate and split" samples' results were not within an acceptable range for all chemicals analyzed. This means that the data is not validated and that the sampling/analysis procedures were not of high quality.

II. INADEQUATE SAMPLING/SAMPLING PROCEDURES:

There are numerous reasons why the sampling and sampling procedures were deficient.

* One sampling round is not enough to make any definitive conclusions. It can only <u>suggest</u> that there is or is not contamination.

* No off-site sampling was conducted even though all of the results suggest that the spread of contamination was probably airborne. Soil samples from the properties (b) (6) [redacted] and water/soil sediment samples from [redacted] (b) (6) [redacted] should be analyzed, at minimum. [redacted] (b) (6) (b) (9) [redacted].

* The method of identifying samples was incorrect. Each individual container should have been considered as a separate sample and labelled as such, even if they are collected from the same location but intended for different analysis. The COC's labeled various containers from the same location with the same I.D. Each container was intended for different analysis. It is not specified whether these are duplicates or replicates and assumes that the material (water or soil) in each container is identical. This is without justification unless the media was collected in one container first and then transferred to each individual container. Furthermore, each individual container needs to be counted as a separate sample for determining the number of QC samples required.

* The consistent contamination found in the blanks is indicative of poor sampling techniques. The consistency of this is unacceptable. In fact, the entire VOC discussion on pages 23 and 24 and the stack residue collection discussed on page 28 both demonstrate poor sampling techniques. Why wasn't re-sampling conducted for the samples found to contain toluene for the purpose of confirmation?

o Not all samples were shipped within the stated 24 hour period (i.e. SS-20).

o The field logs in the report are incomplete. The only field logs in the report are for water sampling, and these did not have a record of the sample temperatures prior to shipment, as I had requested in my comments to the work plan, dated 9/11/90.

* Appendix E - Why was the time between purging and sampling of the monitoring wells so inconsistent? For example, M2 was sampled 1 hr and 24 minutes after purging, while MW3 was sampled only 5 minutes after purging.

* Why was acetone used for decontamination? Page 12 of the work plan stated that steam purging or detergent washes would be used. Acetone was found in some of the samples (p. 23), and is suspected to be a field or lab contaminant.

o Purging the wells with a centrifugal pump is not the most appropriate method. This type of pump creates agitation within the well which may cause volatilization of VOC's before the sample is collected with the bailer. Therefore, purging by hand is more appropriate. There were no significant VOC's or semi-volatile compounds detected in the samples. However, there is a possibility that volatilization occurred, and these results may not be representative of what is really in the aquifer.

III. INADEQUATE ANALYSES:

The analyses was deficient for several reasons.

* Consistent contamination of method blanks shows poor laboratory practices. The report does not indicate the extent of the contamination found in the method blanks. How contaminated were they?

* No dioxin analysis were performed on surface soil samples below 3 inches (1-3 feet) despite its presence in soil boring samples up to 7 - 9 feet. The deepest soil boring (11-13 feet) was not analyzed for dioxins. The report states that samples collected at 1-3 feet would be re-sampled for the week of 1/29/91. Are the results back yet? Was anything other than dioxin analyzed for to see if replication of results occurs?

* There was an overall inconsistency in the analyses performed. For example, the split samples were not analyzed for the same analytes, the landfill surface soil samples greater than 3 inches deep were not analyzed for PCB's or pesticides, and the trip blanks were not analyzed for anything but VOC's. This lack of consistency is a major weakness in the analyses. There were a few circumstances where the same location and depth was sampled on different days, but opposite analyses were performed thereby missing the opportunity for confirmation of the results.

o The tests done in October, 1989 for the Phoenixville School District showed levels of strontium. Why were the samples not analyzed for this compound?

* There is a statement made on page 50 that no dioxins/furans were found in the groundwater. The table of results has "NA" (not analyzed) for dioxins/furans for all of the groundwater samples. This is very confusing at first, but the laboratory reports in appendix G do have values of ND (not detected). The groundwater results table should be corrected.

IV. INSUFFICIENT SITE HISTORY:

The site history seems sparse. There is insufficient follow through on details and inadequate questioning of knowledgeable personnel and/or neighbors.

o Pg. 2 - What was done with the waste from "experimental research" conducted?

o Pg. 3 Was the Maintenance, Repairs, and Utilities Branch or the Engineering Division contacted for review of waste records or interviews with personnel from that time?

o Pg. 3 - Incinerator capacity stated as 5 tons. 5 tons per hour or day ?

o Pg. 4 - Landfill was expanded from what to what and why?

IV. SITE HISTORY (CONT.)

- o Pg. 4 - Inadequate interviewing of personnel from hospital - too limited. One source stated that the incinerator operated at 2000F. This is unlikely for an incinerator during this time period. Were any incinerator records found or any other sources investigated for verification and further detail?

ORIGINAL (Red)

- * Pg. 4 - One source stated that there was little visible smoke and no odors when the incinerator was operating. Where any other sources consulted? Where residents from [redacted] (b)(6) who lived here at the time questioned? If not, why not? I have heard reports of soot/smoke that often covered the area when the incinerator ran.

- o At the 2/19/91 public meeting, the Corps indicated that they had made contacts with local environmental firms. These are not mentioned in the report. What firms were contacted and what information did they provide? They also said that they had done many interviews. Exactly how many interviews with hospital personnel and how many with nearby residents were there? (I realize that this information may appear in footnote form, but it isn't easy to decipher from the report.)

V. INCOMPLETE AND INCONCLUSIVE ENDANGERMENT ASSESSMENT

Based on the low level of quality control that was assigned to this project, the non-validated data should not have be used to form the basis for an endangerment assessment.

The endangerment assessment in the report is limited and inconclusive. There is one final statement which says that additional study is required. However, there are no recommendations for future work provided in the report.

At the 2/19/91 meeting, the Army Corps of Engineers stated that there was no "imminent" danger to humans or the environment. This is not stated or proven anywhere within the published report. In fact, it very obviously contradicts the report.

- * The Endangerment assessment does not address past exposures during hospital operation. Exposure during hospital operation may have been a health risk due to emissions of dioxins and metals. Has the possibility of a link to Hodgkin's Disease been investigated?

- * The Endangerment assessment does not address risk of exposure from gardening in contaminated soil. What is the risk? This is a real concern to neighbors whose soil may also be contaminated.

- o The Corrective Action Levels mentioned are proposed levels. Have you looked at the comments provided by industry/experts on these levels? For the compounds found during your investigation, are these levels considered to be high or low? What is the significance of these values and, therefore, your comparison?

ORIGINAL (Red)

VI. ADDITIONAL COMMENTS/QUESTIONS:

* The objectives of this investigation were inadequate in that they focused too much on the landfill and not on the entire site. The people in this community want to know if the previous activity at the site has resulted in contamination of the area, whether via the landfill, the incinerator, the soil, or any other means.

* One of the objectives outlined in the work plan was to identify potential remedial actions. I had thought that this was not done since it is premature to do so with so little valuable data. However, the Army Corps stated that it was not necessary since there is "no imminent danger". The report failed to even address this objective. How can no further action be necessary when the report shows nine compounds in excess of their respective corrective action levels and recommends further study to determine risk to humans and the environment? "No imminent danger" does not correspond to no danger at all.

* Is there a published report detailing the Chester County Health Department's study of the Hodgkin's Disease cases? Many people were totally dissatisfied with the verbal report presented by Dr. Maher, who claimed that there was no statistical significance to 6 cases in one neighborhood. This was based on a comparison of the expected rate of Hodgkin's Disease for a three county area, not one small neighborhood.

o Why was the potable water sampled? This is not very meaningful data since this water is not groundwater, is treated and is not from the area. This public water supply comes from the Schuylkill river. How is this relevant information?

o What is the definition of "regional" used to describe background concentrations? One should not compare concentrations found in regional areas that are known to be contaminated (ex. Paoli, Kimberton). Furthermore, one should not justify the presence of non-naturally occurring compounds such as dieldrin as being comparable to background.

o Page 1 mentions some waste removal actions done at the site. At the 2/19/91 meeting, it was stated that a summary would be issued in three weeks. Has this been made available to the public?

o Page 23 hypothesizes that the lead concentrations may have been due to automobile emissions. This seems very far fetched as this is not even close to a highway or parking lot.

o How are the two well inventory lists related? These are not complete. I know of one neighbor's well which is not on here despite the fact that you were informed of this person's well at the last public meeting ([redacted] (b) (6), (b) (9) [redacted]). Perhaps there are others too.

o Page 20 references the tests done by RMC Environmental Services in May 1990. What compounds were tested for? Was dioxin found? Where is the pond that they tested?

Comments on the Valley Forge General Hospital Investigation

2/19/91

(b) (6) [redacted]

ORIGINAL (Red)

Background: B.S. Chemical Engineering, presently working as an Environmental Engineer.

My limited review of the report on IT's investigation at the Valley Forge General Hospital has left me with numerous questions and concerns. I have discussed these concerns with some of my colleagues who concur with my findings. My review focused on the areas of the investigation that I am most knowledgeable of. I can not cover all of the details of my findings tonight. I hesitate to submit my concerns to you in writing since I was very dissatisfied with the response that I received from my previous comments on the work plan. Much of that response was vague and skirted the issues. Despite my misgivings, I will submit to you written detailed examples and specific questions for each of my concerns after I update my comments to incorporate tonight's discussion.

Prior to presenting a brief summary of my findings, I would like to make a general comment. For the average person, this 3 volume report is overwhelming. It would have been helpful if an executive summary had been provided for the layman to read. If the report was more concise and more organized, data would not have been repeated in several places. I just want people to realize that the size of the report does not necessarily correspond to the amount of work accomplished.

1. The quality control was totally inadequate to validate much of the information found during this investigation. These invalidated results were then used as the basis for the entire report and its conclusions. There seems to be a misunderstanding of the different types of quality control samples required for validation of both sampling and analytical techniques. Certain types of quality control samples are required to validate sampling procedures. Different types of quality control samples are required to validate the laboratory work. There was an insufficient number of every type of quality control sample taken. For those few quality control samples that were analyzed, the analysis was incomplete, and the results suggest poor sampling and/or analysis techniques.

2. There are significant problems with both the scope of the sampling and the sampling techniques. The number of samples taken was too limited to allow definitive conclusions to be reached. The presence of an incinerator near the property boundary suggests the need for off-site sampling due to the possibility of airborne contaminants. The procedures are flawed as evidenced by the contamination found in quality control blanks. The presence of contaminants in quality control blanks undermines the validity of the results.

3. The analysis was deficient for several reasons. There was consistent contamination of method blanks which indicates poor analytical techniques, and there was not consistency in the type of analyses performed from sample to sample.

4. The site history is incomplete. There is insufficient follow through on details and inadequate questioning of knowledgeable hospital personnel and/or neighbors.

5. The endangerment assessment is limited and inconclusive. There is one final statement which says that further work is necessary, however no specific recommendations for future investigation are provided.

The most significant accomplishment in the six months since our last public meeting is the completion of the monitoring well installations. The results in the document that we are discussing tonight should be viewed as very preliminary; they should only be used to formulate the sampling and analytical strategy for future investigation.

My key concern tonight is the pressing need for the prompt initiation of further investigation of both on and off-site contamination at the Valley Forge General Hospital. Any future work must address the problems that I have just summarized.

My intention in submitting these comments is to provide constructive criticism. I look forward to discussing your detailed response to these issues in a public forum in the very near future.